BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Subsidiary Diploma in Engineering (360 GLH) 601/7584/9 Pearson BTEC International Level 3 Foundation Diploma in Engineering (540 GLH) 601/7591/6 Pearson BTEC International Level 3 Diploma in Engineering (720 GLH) 601/7580/1 Pearson BTEC International Level 3 Diploma in Electrical and Electronic Engineering (720 GLH) 601/7579/5 Pearson BTEC International Level 3 Diploma in Mechanical Engineering (720 GLH) 601/7583/7 Pearson BTEC International Level 3 Diploma in Manufacturing Engineering (720 GLH) 601/7582/5 Pearson BTEC International Level 3 Extended Diploma in Engineering (1080 GLH) 601/7588/6 Pearson BTEC International Level 3 Extended Diploma in Electrical and Electronic Engineering (1080 GLH) 601/7587/4 Pearson BTEC International Level 3 Extended Diploma in Mechanical Engineering (1080 GLH) 601/7590/4 Pearson BTEC International Level 3 Extended Diploma in Digital Engineering (1080 GLH) 601/7586/2 Pearson BTEC International Level 3 Extended Diploma in Manufacturing Engineering (1080 GLH) 601/7589/8
Unit number and title	**Unit 30: Mechanical Measurement and Inspection Technology**
Learning aim(s)	**B:** Carry out mechanical measurement and inspection methods to determine if components are fit for purpose
Assignment title	Applied principles of mechanical measurement and inspection methods
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are a first year technical apprentice and you have been asked by your supervisor to contribute to the quality standards by evaluating the use of a range of gauges and comparators that can be used to provide information regarding a number of component features including geometric features.

Task 1	As part of the task that you have been given by your supervisor you are required to examine and evaluate in different ways the features of a number of components. You are to be given the components and asked to look at various features and to measure/gauge those features, keeping a log of the results for each feature for each of a range of instruments used. The features will include; surface finish, width, height, angle, diameter, thickness and one geometrical feature. The instruments and gauges will include three different types of mechanical measurement equipment and two different types of comparator and two different gauge types. It is expected that each instrument and comparator is properly calibrated before use. Having used different measuring equipment, comparators and gauging systems for the same features, across the full range of features presented, a report must be produced that notes the; 1) precision - how close the measurements are to one another, 2) accuracy - how close the measurements are to the "true measurement", 3) uncertainty - the qualification of doubt about the measurement result and its "quality", 4) resolution - the smallest difference in dimensions that the measuring equipment can detect or distinguish. There must be an evaluation that makes a judgement concerning the most appropriate method to use for particular features and the requirement of the measuring equipment, comparators and gauging systems used in respect of measurement, accuracy and calibration, why it is important and how inherent errors are accommodated. The report should be logical, well written, use technically appropriate language and reference appropriate principles associated with measuring, the use of comparators and gauging principles.

Checklist of evidence required	1) A log of the measurement and gauging undertaken for the features presented. 2) A report that notes the precision, accuracy, uncertainty and resolution. 3) An evaluation of the best method of measurement/gauging to use in given circumstances. 4) A detailed witness statement that is individual and details the proper calibration and ultimate use of the instruments and gauges for the features that have been given.
Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
30/B.D2	Evaluate the resolution and measurement of uncertainty for comparators and/or gauges against the mechanical measurement equipment used to inspect a range of components.
30/B.M2	Measure accurately and precisely, using three different types of mechanical measurement equipment, a range of component features.
30/B.M3	Compare the capabilities and use of two different types of comparator against different types of gauges used to inspect a range of component features**.**
30/B.P2	Measure, using three different types of mechanical measurement equipment, a range of component features.
30/B.P3	Select two different types of comparator and gauges and inspect a range of component features.
Sources of information to support you with this Assignment	Drake P (1999) Dimensioning and Tolerancing Handbook McGraw-Hill, ISBN 0070181314 Griffith G. 2001 Geometric Dimensioning and Tolerancing: Applications and Inspection Prentice Hall, ISBN 9780130604637 Timings R. L. 2002 Fundamentals of Engineering Newnes, ISBN 0750656093